

ECONOMIC DOWNTURN HOBBLES COMMERCE

Chemical **TRADE** among most regions dropped significantly in 2009 as overall demand plunged

WORLDWIDE TRADE in chemicals, which soared in 2008 despite a mounting recession, took a break in 2009. Even business with China—which increased in some cases by more than 40% in 2008, boosting the worldwide exchange of goods for that year—saw steep declines in 2009.

Even with the trade slowdown, the U.S. chemical industry kept its coveted position as the country's second-largest exporter after the machinery sector. But within chemicals, both imports and exports fell last year. Imports fell more sharply than exports, with the result that the U.S. trade surplus in chemicals almost quadrupled to \$8.6 billion in 2009 compared with 2008. The last year in which the U.S. had a negative trade balance in chemicals was 2006.

The only category of chemical

trade that increased for the U.S. in 2009 was medicinals and pharmaceuticals, where exports spiked by 15.7%. Still, the U.S. took in \$15 billion more in pharmaceuticals than it exported. Trade in all other categories of chemicals dropped by more than 10%, except for perfume, toilet, and cleaning materials, which slipped by only 3.9% in the export column.

U.S. exports to all regions fell markedly, except to China and Vietnam, where exports rose 8.9% in 2009. U.S. imports from

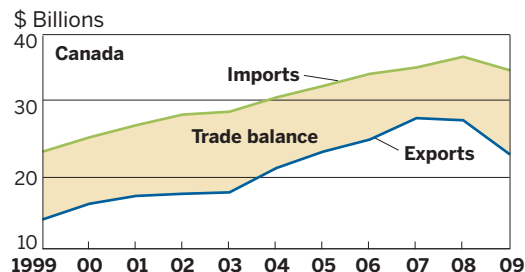
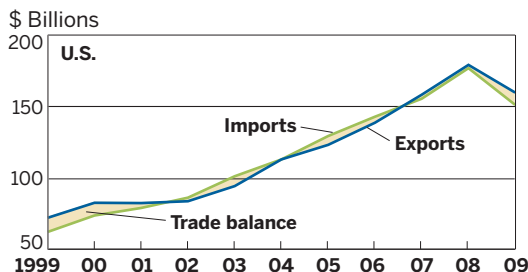
most regions, including China, declined more than 10%. Although growing competition from Chinese manufacturers has been in the news, the U.S. chemical industry continues to maintain a positive trade balance of almost \$2 billion with China.

North American chemical exports were supposed to benefit from low natural gas prices and the strength of Asian economies. In Canada, however, the chemical trade deficit grew by nearly \$3 billion in 2009. And the basic chemicals and resins sector, which might have been expected to benefit from low feedstock costs, saw trade surpluses swing to deficits during the year.

EXPORTS FROM Europe's chemical producers were a bit more lively and slowed markedly only to Russia and South Korea. Exports rose by 19.3% to China, 9.1% to Japan, and 7.2% to Saudi Arabia. Meanwhile, European imports from Brazil, China, Russia, Saudi Arabia, and South Korea saw

NORTH AMERICAN CHEMICALS

The U.S. trade surplus surged in 2009 while Canada's deficit grew by nearly \$3 billion



NOTE: Canadian trade data for all years were converted at the 2009 average exchange rate of \$1.00 U.S. = \$1.1412 Canadian.
SOURCES: U.S. Department of Commerce, Industry Canada, Statistics Canada

U.S. TOTAL TRADE

Chemical industry keeps the number two spot among exporting sectors

\$ BILLIONS	EXPORTS				IMPORTS			
	2006	2007	2008	2009	2006	2007	2008	2009
Machinery & transport equipment	\$494.5	\$536.4	\$556.6	\$441.4	\$709.8	\$738.7	\$721.2	\$569.7
Miscellaneous manufactures	116.0	127.1	134.1	119.9	276.4	293.8	290.0	247.6
Chemicals	138.6	158.2	179.1	159.7	142.8	155.4	176.8	151.1
Manufactured goods classified by material	103.5	112.5	125.0	94.6	223.0	227.2	231.7	152.0
Food & live animals	54.3	62.3	85.8	71.6	56.1	60.9	66.2	62.0
Crude materials, inedible (except fuels)	50.1	62.4	76.5	61.8	30.4	30.5	32.9	20.7
Mineral fuels & lubricants	34.9	42.0	76.5	54.7	333.5	360.9	487.9	270.3
Beverages & tobacco	5.1	5.4	5.5	5.0	15.8	17.3	17.2	15.6
Animal & vegetable oils, fats & waxes	2.1	2.9	4.4	3.2	2.9	3.3	5.1	3.7
Other	38.2	53.5	56.5	45.0	64.4	65.7	71.1	65.3
TOTAL	\$1,037.3	\$1,162.7	\$1,300.1	\$1,056.9	\$1,855.1	\$1,953.7	\$2,100.1	\$1,557.9

NOTE: Totals may not sum because of rounding. **SOURCE:** Department of Commerce

double-digit declines. Imports from the U.S. dropped nearly 6%.

In Japan, exports and imports of all chemical goods declined in 2009, except for cosmetics, which enjoyed a 6.9% jump in exports and a 1.5% rise in imports. The drop in inorganic chemicals trade was especially dramatic; both imports and exports plummeted by more than 30%. Trade in rubber also went down steeply, with exports shrinking 17.6%.

In South Korea, overall chemical exports fell by 12.4% and imports dropped 14.1%. Within the petrochemical category, exports sank 14.5% and imports fell by 22.6%.

In 2008, trade with China helped buoy the fortunes of chemical firms in the developed world because the country imported more raw materials to feed its bustling factories.

However, in 2009, China's chemical

trade withered. The country's imports of inorganic chemicals were 29.0% below 2008's, and its imports of organic chemicals fell 8.0%. China also imported reduced amounts of fertilizers, dyes, and pigments than in the previous year. Exports of chemicals from China were similarly constrained. Trade in pharmaceutical products increased, however. China took in 18.7% more medicinal goods and exported 23.0% more than in 2008.

U.S. CHEMICAL TRADE, BY REGION

Exports to China grew, but trade with all other regions shrank

\$ MILLIONS	2006		2007		2008		2009		CHANGE, 2008-09	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
Europe	\$45,398	\$79,653	\$52,546	\$85,976	\$59,352	\$94,902	\$55,049	\$85,822	-7.2%	-9.6%
Canada	24,583	22,172	25,498	24,335	27,118	27,099	24,438	20,448	-9.9	-24.5
Latin America	30,064	10,385	34,345	10,358	40,123	12,893	33,208	7,912	-17.2	-38.6
Japan	8,653	8,029	9,373	8,599	10,636	8,731	8,943	7,809	-15.9	-10.6
China-Vietnam	6,402	6,286	8,648	7,315	9,588	10,823	10,437	8,593	8.9	-20.6
Rest of Asia	17,095	10,589	19,593	12,290	23,075	13,612	19,006	13,382	-17.6	-1.7
Australia	2,400	755	2,843	843	3,299	893	3,050	892	-7.5	-0.1
Middle East	2,057	4,052	2,931	4,509	3,419	6,346	3,151	5,408	-7.8	-14.8
Africa	1,206	686	1,502	963	1,690	1,298	1,618	630	-4.3	-51.5
Other	722	168	911	171	835	227	779	177	-6.7	-22.0
TOTAL	\$138,580	\$142,775	\$158,190	\$155,359	\$179,137	\$176,825	\$159,678	\$151,073	-10.9%	-14.6%

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

EUROPE CHEMICAL TRADE, BY COUNTRY

Overall, exports held up better than imports through the downturn in 2009

\$ MILLIONS	2006		2007		2008		2009		CHANGE, 2008-09	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
Brazil	\$5,116	\$1,838	\$6,026	\$2,457	\$7,213	\$3,034	\$7,069	\$2,579	-2.0%	-15.0%
Canada	6,923	3,124	7,230	4,735	6,883	3,183	6,813	3,353	-1.0	5.3
China	8,492	8,733	10,325	10,502	11,855	12,952	14,142	11,060	19.3	-14.6
India	3,060	3,312	3,456	4,139	4,250	4,624	4,156	4,171	-2.2	-9.8
Japan	12,780	8,580	12,248	9,101	12,200	8,455	13,308	7,740	9.1	-8.5
Russia	15,234	5,627	17,271	6,278	19,247	7,415	15,829	4,627	-17.8	-37.6
Saudi Arabia	3,205	3,501	3,400	3,608	3,891	3,475	4,169	2,214	7.2	-36.3
South Korea	5,281	1,787	5,886	2,178	6,185	2,377	5,414	2,055	-12.5	-13.5
U.S.	76,559	48,524	77,772	49,999	74,491	49,989	74,698	47,234	0.3	-5.5

NOTE: Data represent a total for 27 countries in the European Union. All figures were converted at the 2009 average exchange rate of \$1.00 U.S. = 0.7176 euros.

SOURCE: European Union

U.S. CHEMICAL TRADE, BY PRODUCT

Imports and exports rose for medicinal chemicals but fell for all other sectors

\$ MILLIONS	2006		2007		2008		2009		CHANGE, 2008-09	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
Organic chemicals	\$30,401	\$42,301	\$34,407	\$42,238	\$34,815	\$47,773	\$28,152	\$42,145	-19.1%	-11.8%
Plastics in primary form	24,444	11,969	28,458	11,440	30,918	12,088	24,998	8,172	-19.1	-32.4
Medicinals & pharmaceuticals	29,109	45,957	33,464	53,688	38,225	59,565	44,244	59,910	15.7	0.6
Inorganic chemicals	9,219	11,391	10,958	13,375	13,094	16,832	10,531	10,793	-19.6	-35.9
Plastics in nonprimary form	8,744	6,845	9,278	6,811	10,059	6,830	8,849	5,519	-12.0	-19.2
Perfume, toilet & cleaning materials	9,495	8,332	10,645	8,870	12,149	9,564	11,680	8,404	-3.9	-12.1
Dyeing, tanning & coloring materials	5,461	3,055	5,906	3,116	6,367	3,074	5,700	2,423	-10.5	-21.2
Fertilizers	3,170	3,441	3,742	4,969	7,468	8,393	4,109	4,146	-45.0	-50.6
Other	18,537	9,484	21,332	10,852	26,041	12,706	21,416	9,561	-17.8	-24.8
TOTAL	\$138,580	\$142,775	\$158,190	\$155,359	\$179,137	\$176,825	\$159,678	\$151,073	-10.9%	-14.6%

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

ASIA CHEMICAL TRADE, BY PRODUCT

Although trade shrank, South Korea and Japan maintained their considerable surplus, but China's deficit deepened

\$ MILLIONS	2006		2007		2008		2009		CHANGE, 2008-09	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
CHINA										
Organic chemicals	\$7,626	\$6,287	\$9,661	\$6,417	\$13,354	\$9,191	\$7,819	\$6,523	-41.4%	-29.0%
Organic chemicals	15,542	29,859	20,597	34,826	29,125	39,301	24,245	36,176	-16.8	-8.0
Pharmaceutical products	1,531	2,394	2,053	3,451	2,881	4,886	3,421	6,012	18.7	23.1
Fertilizers	1,169	2,484	3,737	2,906	4,383	3,482	2,625	1,992	-40.1	-42.8
Dyes & pigments	3,000	3,507	3,577	3,806	3,713	4,023	3,066	3,593	-17.4	-10.7
Other (a)	8,884	11,653	11,490	17,163	15,450	16,078	12,957	15,149	-16.1	-5.8
TOTAL	\$37,752	\$56,184	\$51,115	\$68,569	\$68,906	\$76,961	\$54,133	\$69,445	-21.4%	-9.8%
JAPAN										
Organic chemicals	\$18,589	\$12,260	\$20,751	\$13,024	\$20,228	\$15,606	\$18,866	\$14,078	-6.7%	-9.8%
Inorganic chemicals	3,444	5,522	4,101	6,967	5,116	8,542	3,510	5,521	-31.4	-35.4
Synthetic resins	19,637	9,433	22,047	10,183	23,814	12,101	21,702	9,788	-8.9	-19.1
Photographic materials	4,703	365	4,684	406	4,641	383	3,890	370	-16.2	-3.4
Fertilizers	105	728	130	787	225	1,627	99	862	-56.0	-47.0
Dyes & pigments	3,384	1,163	3,621	1,264	3,997	1,501	3,655	1,134	-8.6	-24.5
Cosmetics	1,025	2,002	1,114	2,160	1,341	2,357	1,434	2,393	6.9	1.5
Rubber	9,243	4,099	10,450	4,268	11,749	5,455	9,686	3,463	-17.6	-36.5
Other (a)	14,101	13,785	15,902	15,395	17,112	17,984	14,403	19,435	-15.8	8.1
TOTAL	\$74,231	\$49,357	\$82,800	\$54,454	\$88,223	\$65,556	\$77,245	\$57,044	-12.4%	-13.0%
SOUTH KOREA										
Chemicals & chemical products	\$31,806	\$27,573	\$37,545	\$32,433	\$42,710	\$36,658	\$37,415	\$31,505	-12.4%	-14.1%
Petrochemicals (b)	24,099	10,388	28,824	11,624	32,124	12,319	27,466	9,535	-14.5	-22.6

NOTE: Totals may not sum because of rounding. a Calculated by C&EN. b Defined as synthetic resins, synthetic fiber raw materials, and synthetic rubber. SOURCES: Japan Chemical Importers & Exporters Association; Korea National Statistical Office, Republic of Korea; Korea Petrochemical Industry Association

CANADA CHEMICAL TRADE, BY PRODUCT

Canadian trade nose-dived in 2009

\$ MILLIONS	2006		2007		2008		2009		CHANGE, 2008-09	
	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS	EXPORTS	IMPORTS
Basic chemicals	\$8,885	\$8,741	\$10,813	\$9,020	\$9,535	\$9,220	\$7,035	\$7,362	-26.2%	-20.1%
Resins, synthetic rubber & fibers	6,769	6,360	6,482	5,959	6,580	6,130	4,544	4,784	-30.9	-22.0
Pesticides, fertilizers & other agricultural chemicals	1,370	1,353	1,470	1,529	2,104	2,107	1,441	1,799	-31.5	-14.6
Pharmaceuticals & medicine	4,769	9,962	5,960	10,808	5,931	11,094	6,632	12,726	11.8	14.7
Other chemical products	3,560	8,069	3,612	8,104	3,885	8,336	3,576	8,297	-8.0	-0.5
TOTAL	\$25,355	\$34,485	\$28,337	\$35,421	\$28,035	\$36,887	\$23,229	\$34,968	-17.1%	-5.2%
TOTAL WITH U.S.	\$19,913	\$21,715	\$20,515	\$21,388	\$21,414	\$21,715	\$17,545	\$20,193	-18.1%	-7.0%
U.S. SHARE	68.8%	55.2%	63.4%	52.9%	66.9%	51.6%	66.2%	50.6%		

NOTE: Monetary statistics for all years were converted at the 2009 average exchange rate of \$1.00 U.S. = \$1.1412 Canadian. Totals may not sum because of rounding.

SOURCES: Statistics Canada, Industry Canada

U.S. CHEMICAL TRADE BALANCE, BY PRODUCT

Trade balance stayed positive, thanks to strong performance by plastics, perfumes, and dyes

\$ MILLIONS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Organic chemicals	-\$6,106	-\$9,632	-\$12,680	-\$13,373	-\$12,425	-\$8,835	-\$11,304	-\$11,900	-\$7,831	-\$12,958	-\$13,993
Plastics in primary form	6,330	7,439	7,189	7,471	7,761	9,858	10,380	12,475	17,018	18,830	16,826
Medicinals & pharmaceuticals	-2,295	-1,572	-3,203	-8,570	-12,307	-11,123	-13,087	-16,848	-20,224	-21,340	-15,666
Inorganic chemicals	-472	-582	-463	-406	-1,663	-1,833	-2,315	-2,172	-2,417	-3,738	-262
Plastics in nonprimary form	1,529	1,983	1,715	1,656	1,710	1,682	1,678	1,899	2,467	3,229	3,330
Perfume, toilet & cleaning materials	1,863	2,005	2,278	1,940	1,246	794	483	1,163	1,775	2,585	3,276
Dyeing, tanning & coloring materials	1,055	1,529	1,399	1,619	1,801	2,021	2,048	2,406	2,790	3,293	3,277
Fertilizers	1,618	796	357	643	422	316	-496	-271	-1,227	-925	-37
Other	6,261	6,944	6,857	6,556	6,558	7,038	7,446	9,053	10,480	13,335	11,855
TOTAL	\$9,783	\$8,910	\$3,449	-\$2,464	-\$6,897	-\$82	-\$5,167	-\$4,195	\$2,831	\$2,312	\$8,605

NOTE: Totals may not sum because of rounding. SOURCE: Department of Commerce

CANADA CHEMICAL TRADE BALANCE, BY PRODUCT

Canada's chemical deficit grew for the second consecutive year

\$ MILLIONS	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Basic chemicals	-\$1,640	-\$883	-\$1,105	-\$1,039	-\$1,235	-\$671	\$9	\$145	\$1,792	\$315	-\$328
Resins, synthetic rubber & fibers	-613	-326	-51	-366	-205	138	95	409	522	450	-240
Pesticides, fertilizers & other agricultural chemicals	-117	-158	-305	-221	-332	-67	132	18	-59	-4	-358
Pharmaceuticals & medicine	-2,984	-3,601	-4,151	-4,836	-4,945	-4,864	-4,989	-5,193	-4,848	-5,164	-6,094
Other chemical products	-4,108	-4,287	-4,238	-4,681	-4,572	-4,420	-4,487	-4,508	-4,493	-4,451	-4,721
TOTAL	-\$9,463	-\$9,254	-\$9,849	-\$11,144	-\$11,288	-\$9,887	-\$9,241	-\$9,130	-\$7,084	-\$8,853	-\$11,739

NOTE: Monetary statistics for all years were converted at the 2009 average exchange rate of \$1.00 U.S. = \$1.1412 Canadian. Totals may not sum because of rounding.

SOURCES: Industry Canada, Statistics Canada